KKU-IENC2014

"Engineering and Technological Responses to Global Challenges"

March 27 - 29, 2014
Pullman Khon Kaen Raja Orchid Hotel
Khon Kaen, Thailand

Abstract Collection

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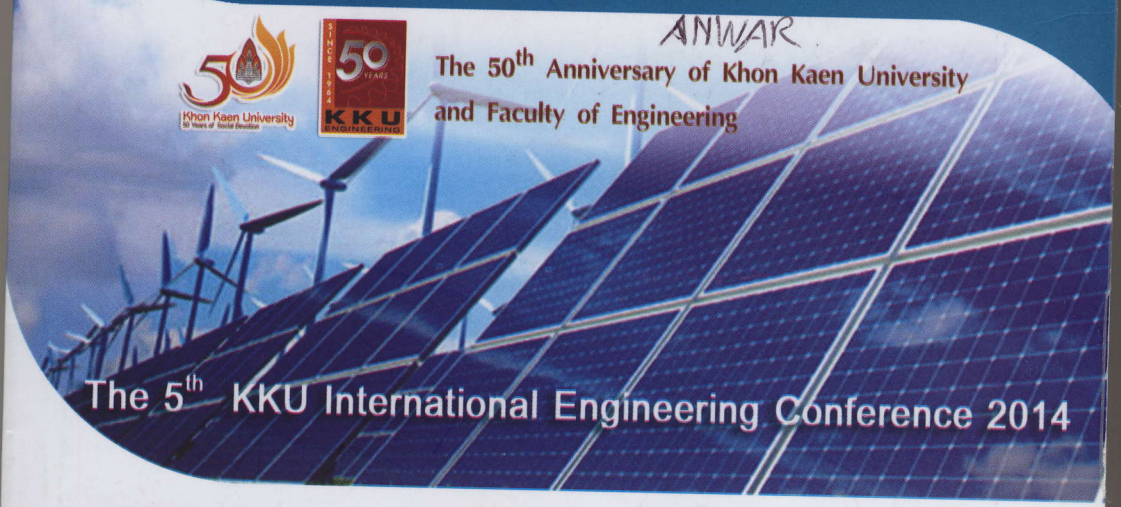

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Mercury Emission from Artisanal Buladu Gold Mine and Its Bioaccumulation in Rice Grains, Gorontalo Province, Indonesia

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Keywords: Artisanal gold mine, THgmass balance, amalgamation, open burning, dry deposit, surface soil, rice grains

Abstract. Available forms of mercury (Hg) released from artisanal gold mine activities could be taken up increasingly by plants via root and leaf stomata. Total mercury (THg) concentrations in dry deposit, surface soil and rice grains were investigated as well as the potential risks in september 2011 from three rice fields of concern. The results revealed that the concentrations of THg in dry deposition, top soil (0 to 5 cm depth), sub soil (6 to 10 cm depth) and rice grains (*Oriza sativa* L.) both brown (once milled) and white (twice milled) grains were ranged from 166 to 322m^{-2} day^{-1}, 484 to 4244 µg kg^{-1}dw, 122 to 1812 µg kg^{-1}ww, and 113 to 1084 µg kg^{-1}ww, respectively. Hazard quotient (HQ) values for dry deposition, top soil and sub soil were ranged from 3 to 7, 5 to 42 and 5 to 36, respectively. Target hazard quotient (THQ) for brown and white rice grains consumptions were found in the range of 0.1 to 1.6 and 0.1 to 1.0, respectively. THQ values through brown rice consumption exceeded the guideline (>1) presented that the brown rice in these areas should not be safe for consumption and are at risks for the whole lifespan. However, the THQ values of both brown and white rice grains in some areas were still low and should be safe for the whole life span consumption.